Navy Modeling and Simulation Management Office

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Background

- **DoD Directive 5000.59, 4 Jan 1994**
  - **Establishes M&S management structure, assigns responsibilities, directs Service implementation**
- **SECNAVINST 5200.38A, 28 Feb 2002**
  - **Establishes M&S within ASN, Navy, and Marine Corps**
- **OPNAVINST 5200.34, 28 May 2002**
  - **Assigns CNO(N6/7) as M&S Executive Agent with responsibilities for setting Navy Vision and Policy.**
  - **Delineates duties for the Navy Modeling & Simulation Management Office**
  - **NAVMSMO / OPNAV N61M Established August 1995**

Navy M&S Vision and Goals

***The Navy's Vision** is for simulation to be a robust, responsive, and constantly-present capability to visualize alternatives, predict outcomes, and provide course-of-action assessments and efficient training to decision makers.*

***The goal** of the Navy's M&S community is to provide capable, reactive, and flexible simulation systems that are always available to improve operational decision making, assessment and experimentation, training, and acquisition.*

NAVMSMO Tasking

- **Provide centralized management and the corporate-Navy M&S policy, planning documents, instructions and standards**
- **Provide for common tools and services**
- **Improve coordination of Navy M&S development and use (both internal and Joint) across functional areas**
- **Participate in Joint reviews, including coordination and approval of Department of Defense Modeling and Simulation plans, programs, policies and procedures and Department of Defense publications**
- **Provide a web-based central repository for information on modeling and simulation applications, standards, and data bases that serves as the single-point-of-contact for all Navy M&S matters**
- **Promote simulation education and outreach**

The only M&S corporate effort that spans across the DO

Contribution To Sea Power 21

Sea Strike: Modeling & Simulation facilitates the prediction of enemy locations and strength thus supporting time critical operations

Sea Shield: Modeling & Simulation enables efficient system design, deployment, training, and operation

Sea Basing: Modeling & Simulation helps define optimum locations for and load-outs of pre-positioned and forward deployed assets, assess spare parts needs, determine transportation requirements

FORCEnet: Modeling & Simulation enables the quantitative assessment of alternatives and a much fuller comprehension of the balances between information

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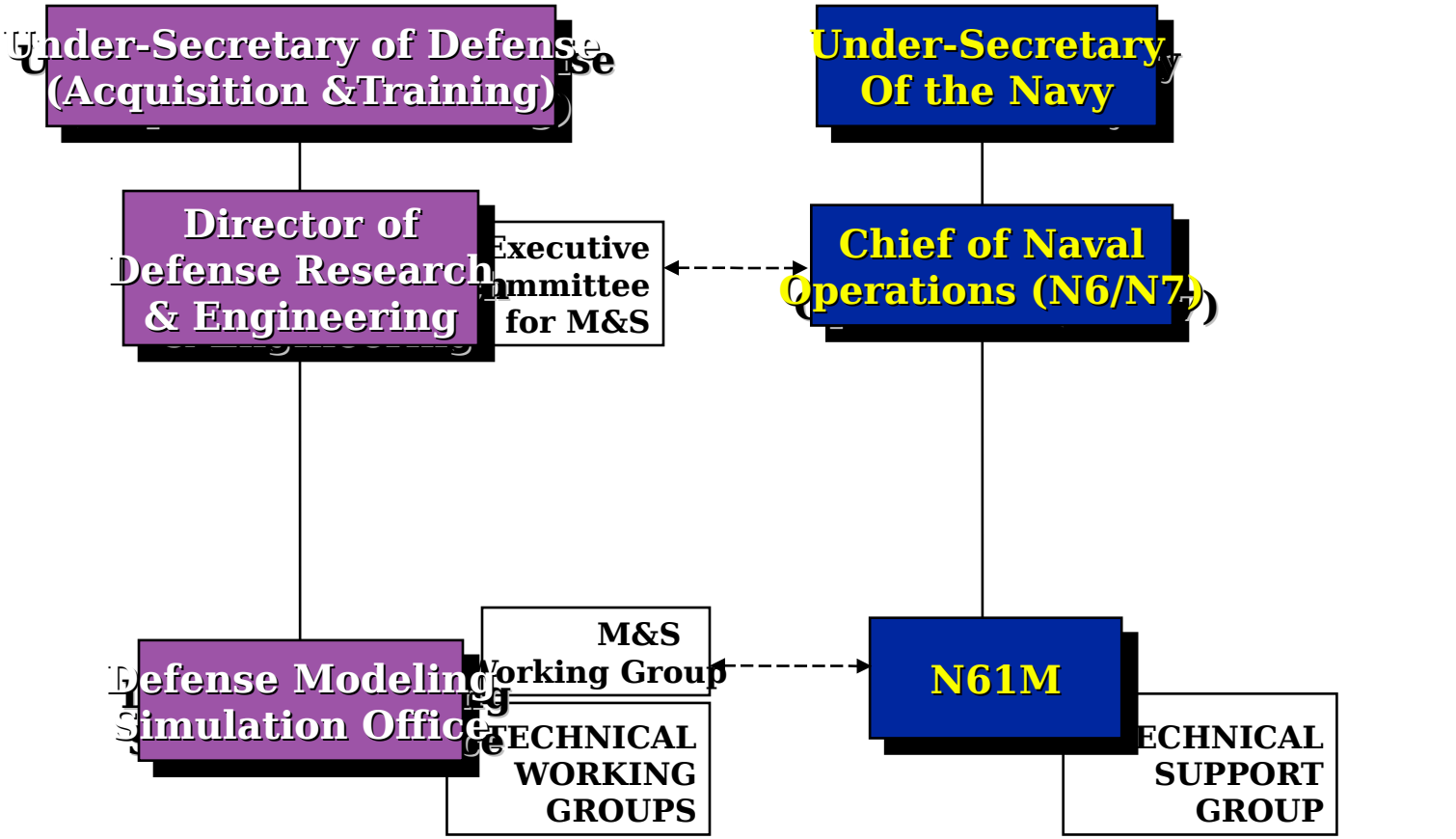
Modeling & Simulation is key in the CNO's strategy to accelerate transformation

Command Relationships



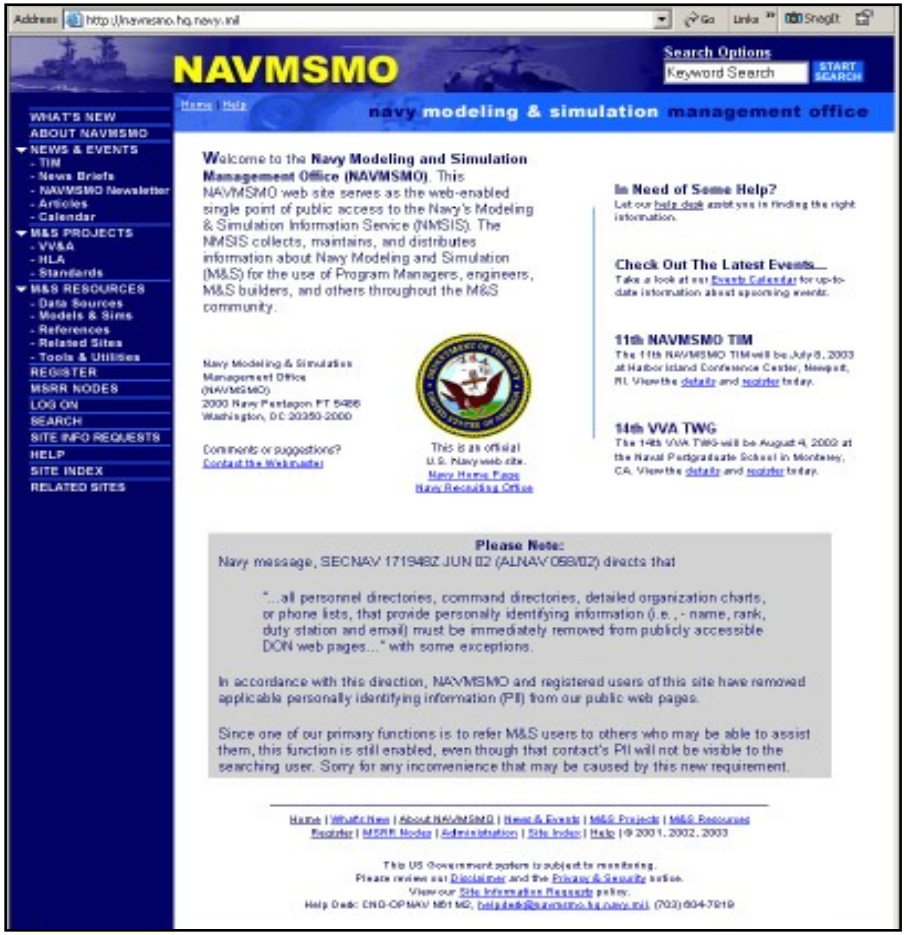
* N61 - Environmental EA for Oceans

Functional Relationships

Strategy: ***Partner with OSD, JCS, DOD agencies, Services, & Navy activities***

Navy Modeling and Simulation Information Service (NMSIS)

- Set-up in 1996 in compliance with DoD Directive 5000.59 and SECNAV INST 5200.38.
- Navy's Web-based single source M&S Information System
- Maintains the authoritative catalog of Navy M&S as an online, publicly accessible database.
- Latest Navy M&S Events And Information
- The catalog is completely interoperable with the Army, Air Force, Missile Defense Agency (MDA) and DoD C3I M&S Resource Repositories
- http://navmsmo.hq.navy.mil


NAVMSMO
navy modeling & simulation management office
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RELATED SITES
Welcome to the Navy Modeling and Simulation Management Office (NAVMSMO). This NAVMSMO web site serves as the web-enabled single point of public access to the Navy's Modeling & Simulation Information Service (NMSIS). The NMSIS collects, maintains, and distributes information about Navy Modeling and Simulation (M&S) for the use of Program Managers, engineers, M&S builders, and others throughout the M&S community.
In Need of Some Help?
Check Out The Latest Events...
11th NAVMSMO TIM
14th VVA TWG
Please Note:
Navy message, SECNAV 171948Z JUN 02 (ALNAV 058/02) directs that
"...all personnel directories, command directories, detailed organization charts, or phone lists, that provide personally identifying information (i.e., - name, rank, duty station and email) must be immediately removed from publicly accessible DON web pages..." with some exceptions.
In accordance with this direction, NAVMSMO and registered users of this site have removed applicable personally identifying information (PII) from our public web pages.
Since one of our primary functions is to refer M&S users to others who may be able to assist them, this function is still enabled, even though that contact's PII will not be visible to the searching user. Sorry for any inconvenience that may be caused by this new requirement.

The Navy Modeling & Simulation Standards Project

- **NOMINATE:** Identify the need for Navy M&S Standards and Best Practices.
  - **EVALUATE:** Technical Review by a team of M&S experts with feedback from M&S Community.
    - **ADVOCATE:** M&S Community Outreach and Education Program.

The Navy M&S Community and Industry are invited and encouraged to nominate M&S standards that will support the use and reuse of Navy models, simulations, and data; as well as supporting protocols, techniques and processes. The steps within the Navy's M&S Standards Process focus on three key activities to Nominate, Evaluate and Advocate Navy M&S Standards. Essential to these key elements will be automated web tools; collaboration and facilitated support to address and resolve issues; and M&S experts to review, leverage

M&S VV&A Policy

- **DoD Instruction 5000.61: DoD M&S Verification, Validation, and Accreditation (VV&A), 13 May 2003**
  - **Applies to all M&S developed, used, or managed by DoD Components**
  - **Applies to all M&S used in support of Operational Test and Evaluation (OT&E)**

- **SECNAV Instruction 5200.40: VV&A of Models and Simulations, 19 April 1999**
  - **Applies to all DON organizations involved with M&S activities**
  - **Applies to all categories of M&S used by DON activities**
  - **Consistent with SECNAVINST 5200.38A**

VV&A Program Activities

- **VV&A Handbook**
- **VV&A Documentation Tool**
- **VV&A Technical Working Group Workshops**
- **Community VV&A Participation**
- **VV&A Webpage**
- **Membership In The DON M&S Standards Group**

Modeling, Virtual Environments & Simulation (MOVES)

Home
What's New
Academics
Research
Faculty
Students
Theses
Sponsors
Miscellaneous
Hiring

Naval Postgraduate School Modeling, Virtual Environments & Simulation (MOVES) Academic Group

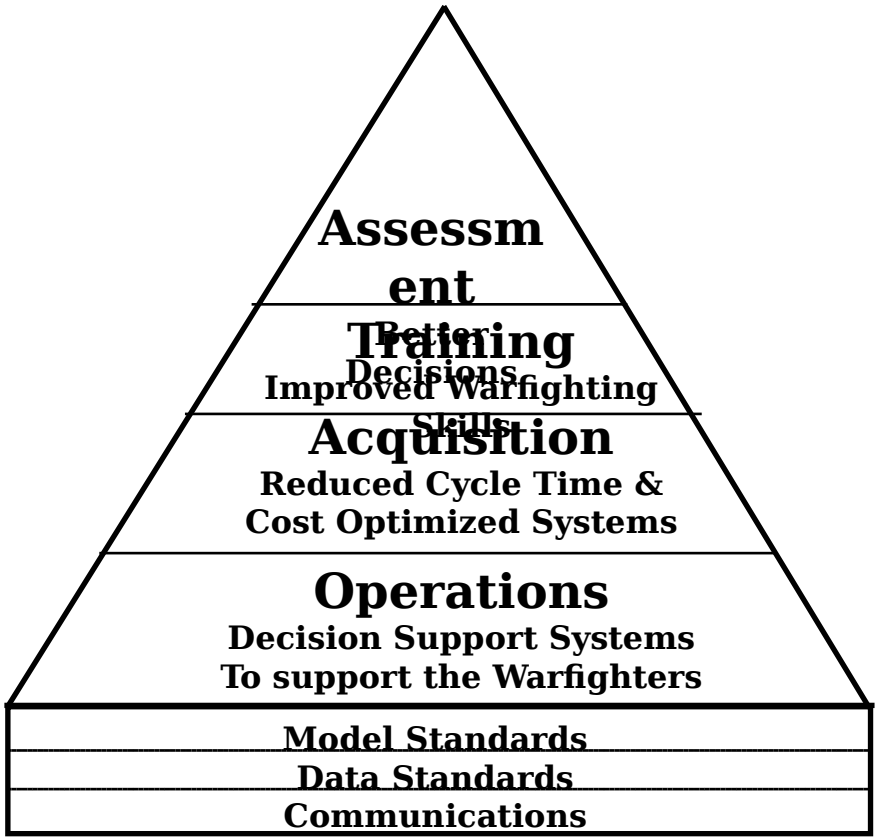
September 20, 2000

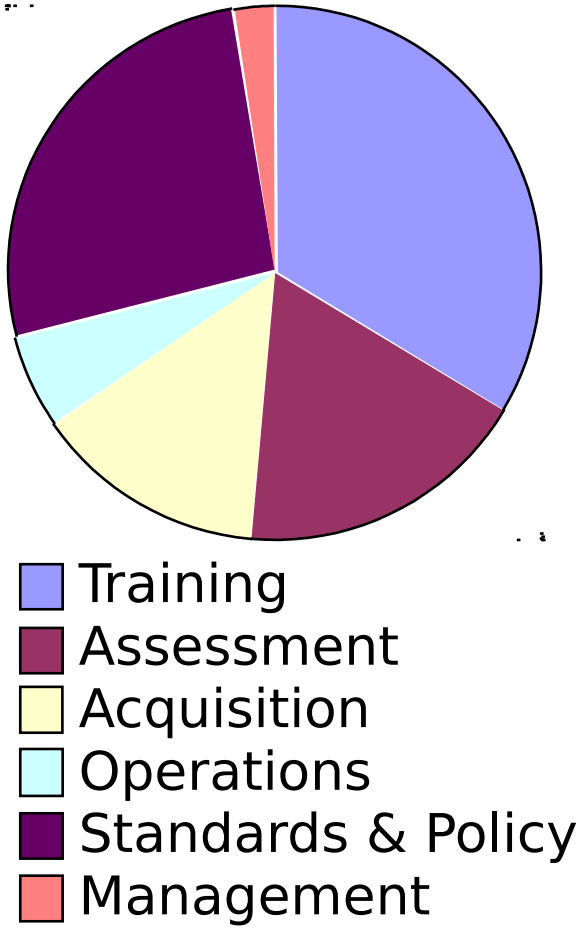
MONTEREY (mz) -- The Naval Postgraduate School MOVES Academic Group is an interdisciplinary department dedicated to education and research in all areas of modeling, virtual environments and simulation. The focus of the group is on strong academic fundamentals with emphasis on application to Department of Defense and Department of Navy problems.

The MOVES Academic Group has a degree program leading towards an MS in MOVES, and a Ph.D in MOVES. The MOVES Academic Group also has a research center dedicated to mid-term and long-term, fundamental research in modeling, virtual environments and simulation.

http://www.movesinstitute.org/

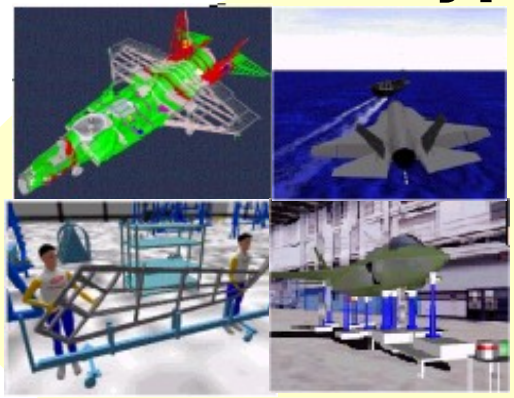
Navy M&S Focus



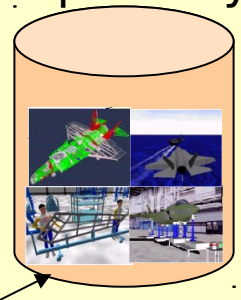


Acquisition

Virtual Prototypes

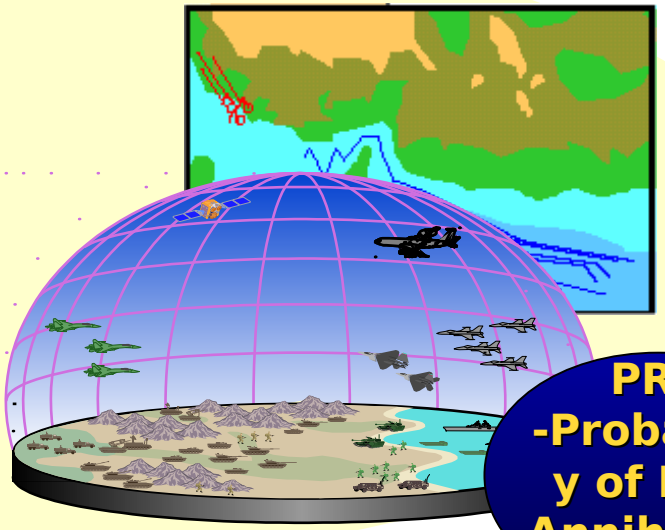


Sys Info Repository



SEDRIS / EnviroFedSim
DIA – common threats

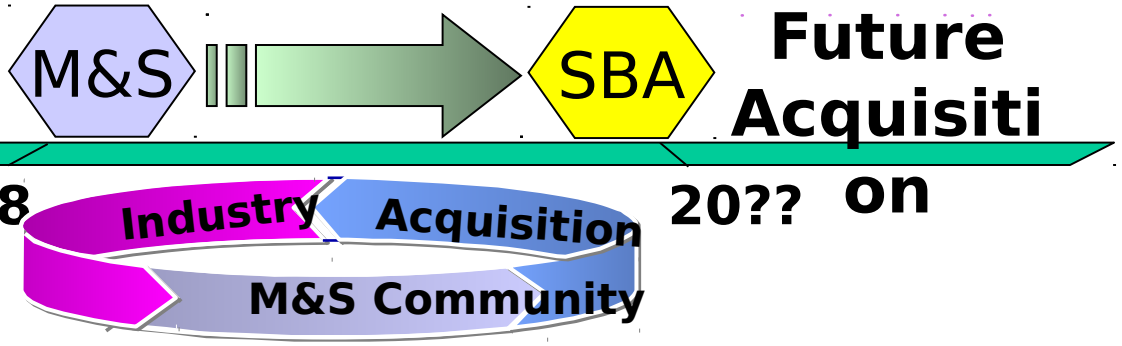
Synthetic Environments



PRA -Probability of Raid Annihilation

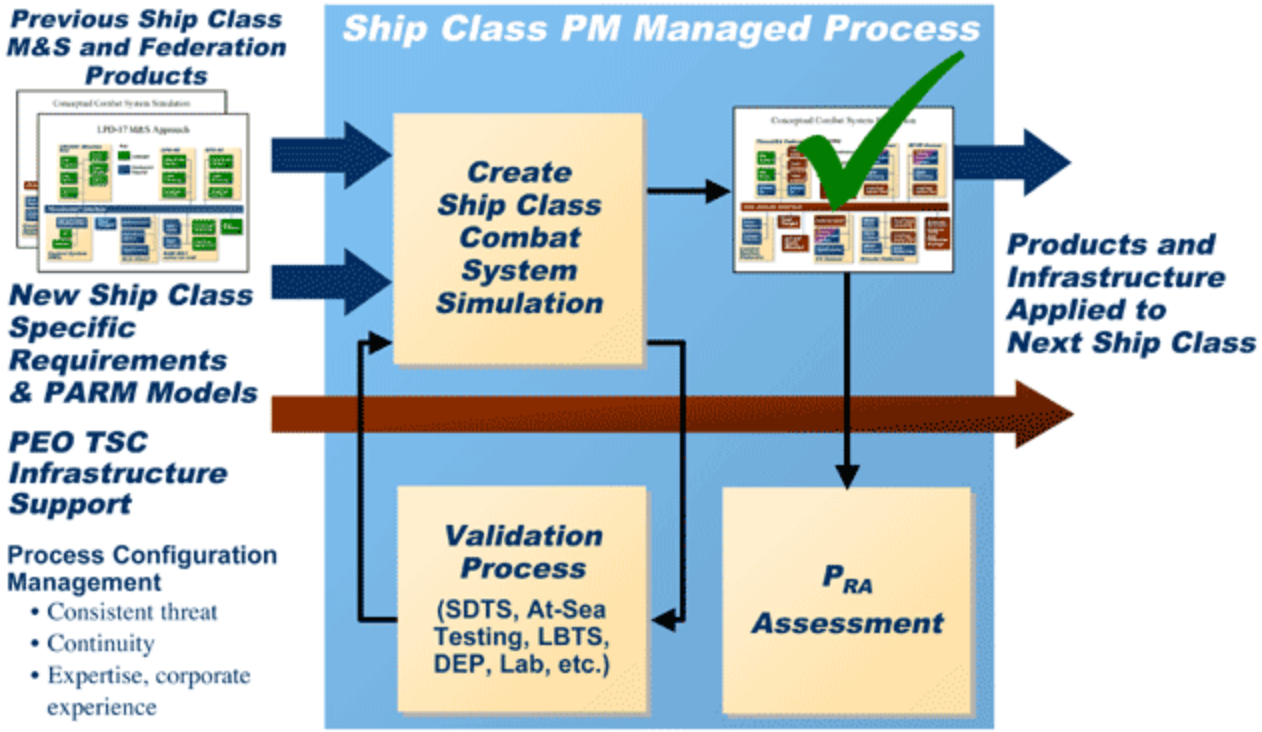
JSB – Joint Synthetic Battlespace - USA
JVB – Joint Virtual Battle Space - USA

Past Acquisition 1998



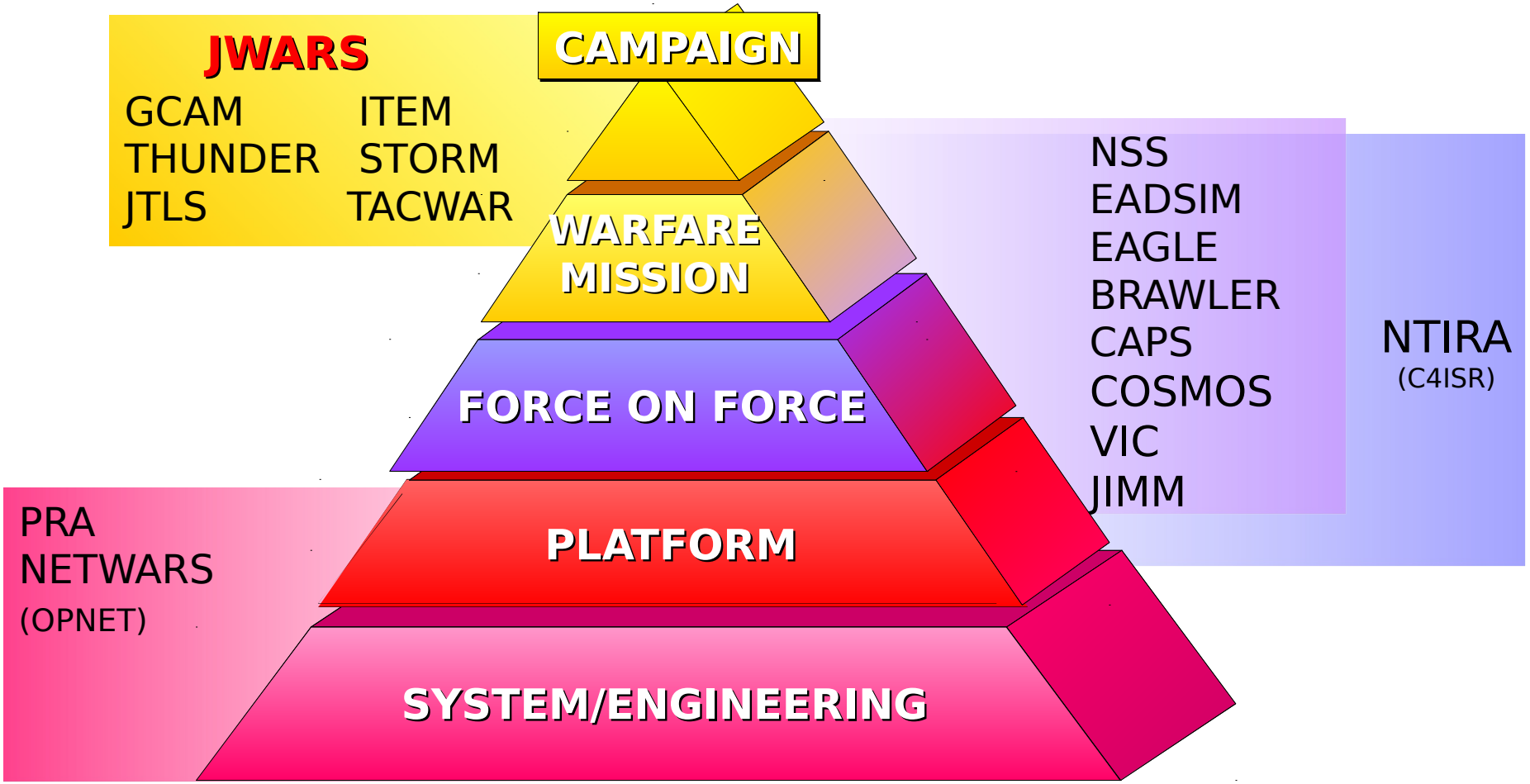
20?? Future Acquisition

Probability of Raid Annihilation (PRA)

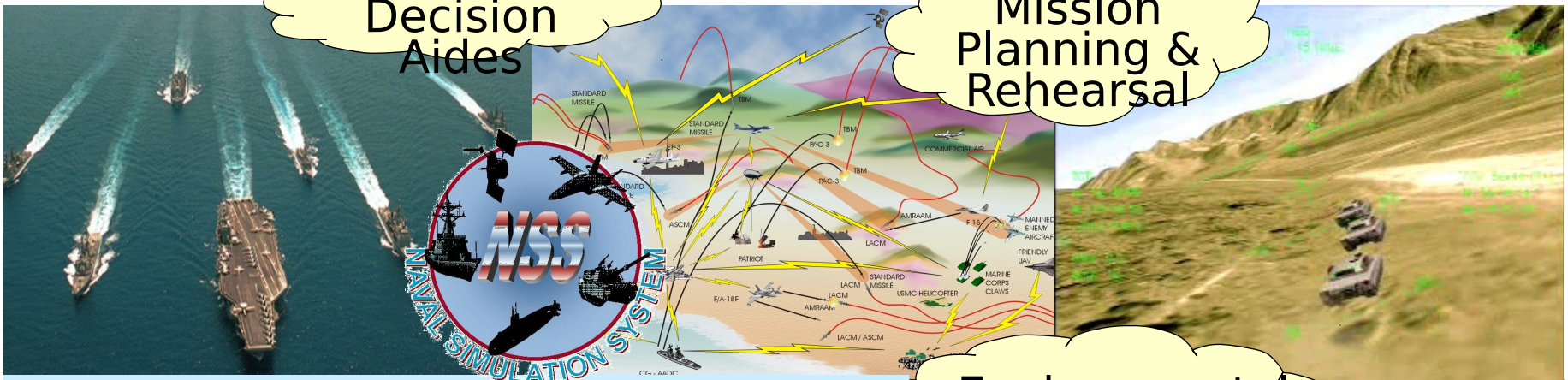

Previous Ship Class M&S and Federation Products
New Ship Class Specific Requirements & PARM Models
PEO TSC Infrastructure Support
Process Configuration Management
• Consistent threat
• Continuity
• Expertise, corporate experience
Ship Class PM Managed Process
Create Ship Class Combat System Simulation
Validation Process
(SDTS, At-Sea Testing, LBTS, DEP, Lab, etc.)
P_{RA} Assessment
Products and Infrastructure Applied to Next Ship Class

Navy Ship Self Defense Combat Systems Engineering

Assessment


JWARS
GCAM
THUNDER
JTLS
ITEM
STORM
TACWAR
CAMPAIGN
WARFARE MISSION
FORCE ON FORCE
PLATFORM
SYSTEM/ENGINEERING
NSS
EADSIM
EAGLE
BRAWLER
CAPS
COSMOS
VIC
JIMM
NTIRA
(C4ISR)
PRA
NETWARS
(OPNET)

Operations



- Planning Tools/Course of Action Analysis
  - Mission Rehearsal
  - Target Weapons Pairing
  - Voyage/strike route Planning
- Interoperability Risk Assessment
  - C4ISR and Network management tools
- & many more applications

Training

Theater

Strategic

Campaign

Many-on-Many

Battle Group

Mission

Few-on-few

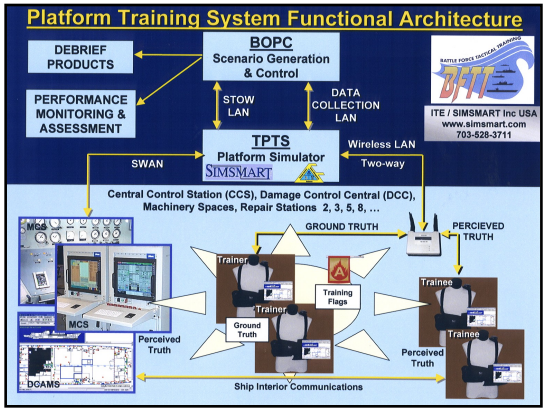
Platforms

Engagement

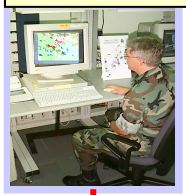
One-on-One

System-on-System

Individual



Embedded Simulation Infrastructure



HLA

C4 Applications	Simulation Services
Shared C4/Simulation Databases	COE Common Devices

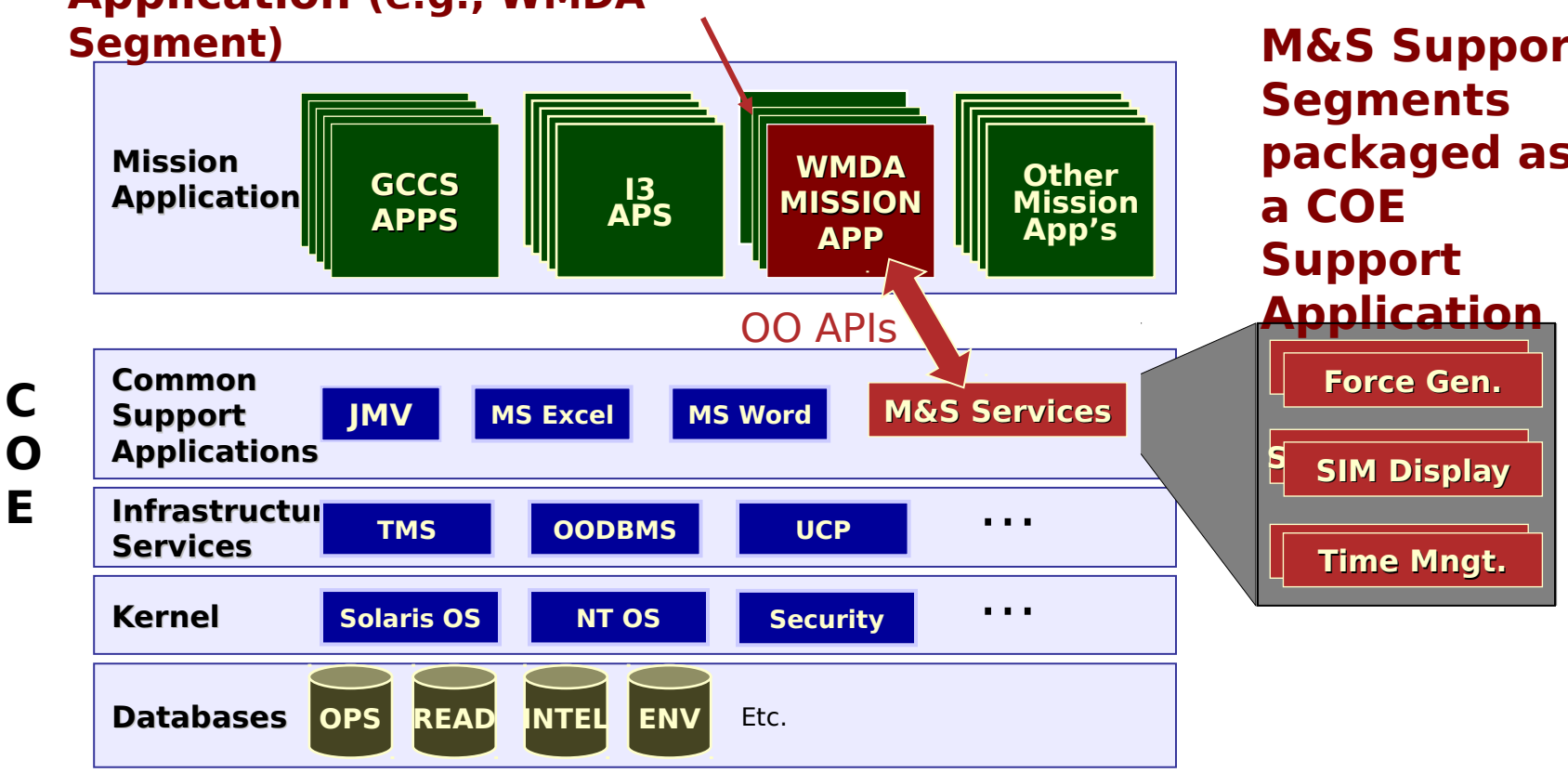
Naval Training Meta FOM (NTMF)

- **Uses an IPT process model**
  - **Inclusive of Navy & Marine Corps individual unit (Tier I) simulation training interests**
- **Goal is to achieve and provide:**
  - **Functionality interoperability across the the Naval training Tier I simulation based training domain, essentially new training capability**
  - **Increased distributed training responsiveness**
  - **Increased commonality among simulation program components**
  - **Increased flexibility in application of simulations to Naval training needs**
  - **Scalability and growth potential**
  - **Opportunity for reduced costs thru commonality and reuse of developed and VV&A'd simulation software**

Embedded Simulation Infrastructure

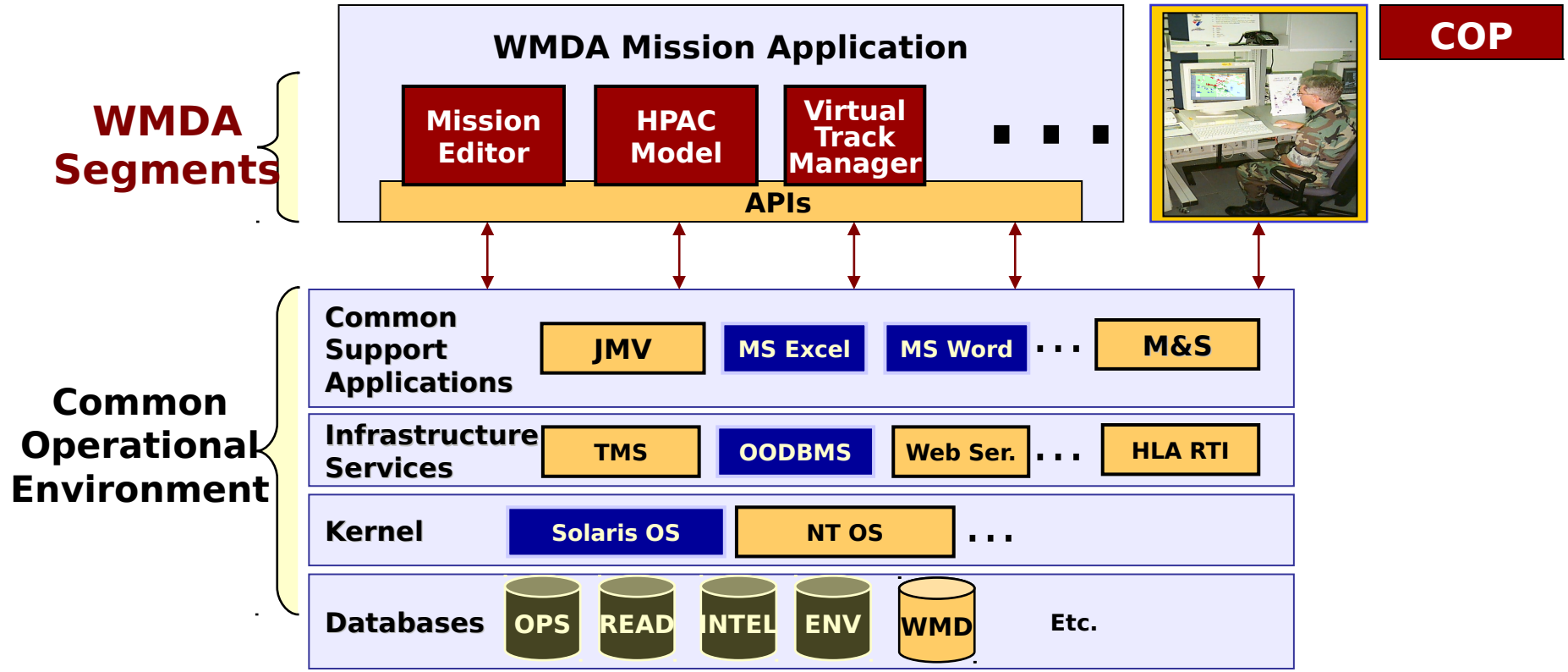
M & S Integrated into the COE

Simulation Based Mission Application (e.g., WMDA Segment)



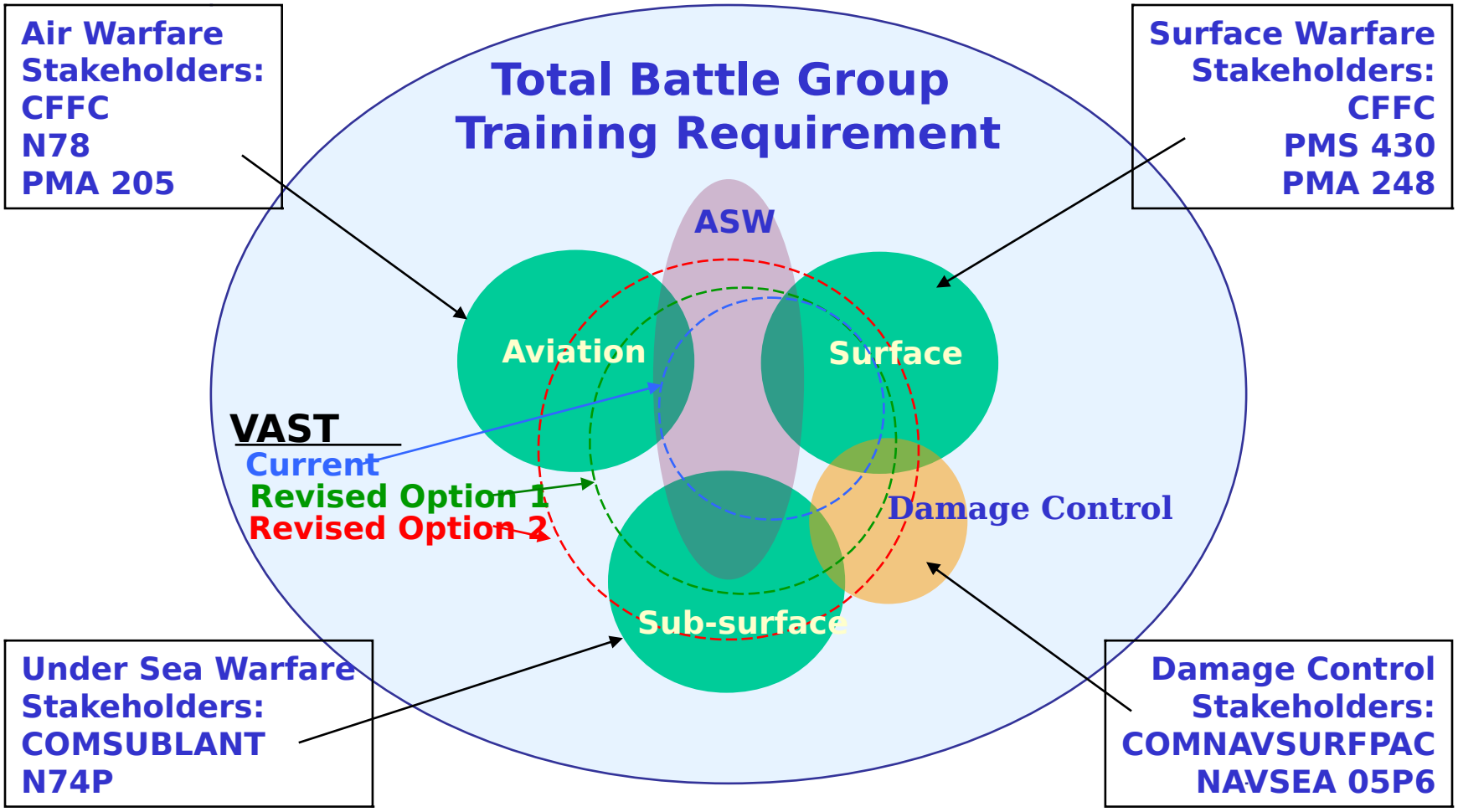
M&S Support Segments packaged as a COE Support Application

Mission Application Architecture



"XXXX" - Primary COE Services used by WMDA

Virtual At-Sea Training (VAST)



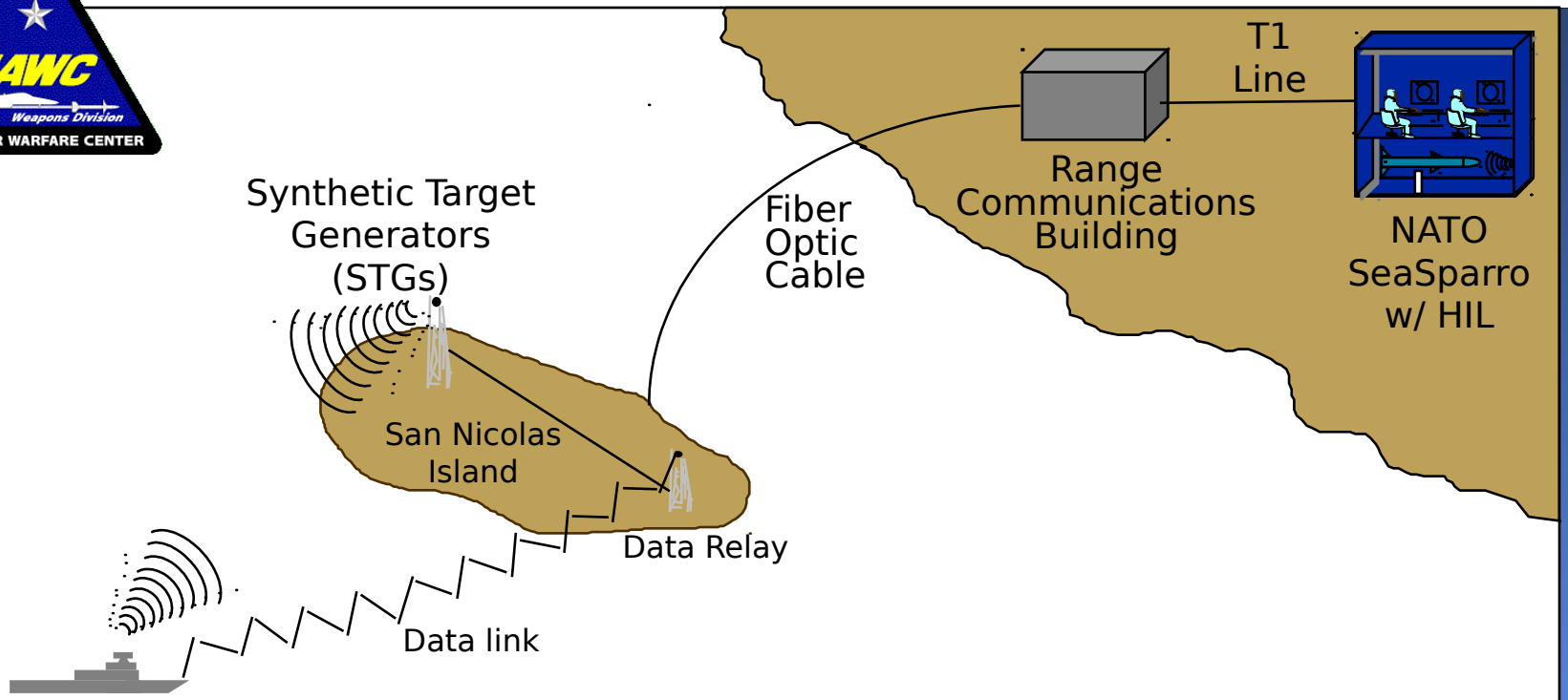
VAST: Integrated Family of Deployable Training Technologies

Live/constructive Warfighters and Weapons, Mix of Live and Synthetic Terrain
USMC HIMARS Trainer
Joint Urban Operations Rehearsal
Naval Surface Fire Support Trainer
Navy/AF TacAir Strike Planning
Constructive Air ASW Training in Port

VAST Capabilities Expected by FY 06 or Before

- **NSFS VAST:** Naval Surface Fire Support trainer (deployed in FY 03 in Atlantic Fleet)
- **Air VAST**
  - ASW AirVAST (04 deployment)
  - Strike AirVAST (06 deployment)
- **USW VAST:** Tiered portable ASW training/tracking range (05)
- **USMC VAST**: indirect fire weapons training (04)
- **VAST-JOUST**: Training of Army-Navy-Air Force-Marine Corps elements in Joint urban

Virtual Missile Range (VMR)



Ship operating on the NAWCWD range

- STGs stimulate the operational ship's Radar and Fire-Control Systems
- Ship initiates it's Missile Launch sequence (weapon is simulated)
- Engagement is played out in the shore-based Hardware-In-the-Loop (HIL) simulation